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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, TRI V

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

03/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,685	<b>Applicant(s)</b> SAITOH, TAKASHI	
	<b>Examiner</b> TRI V. NGUYEN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-25 is/are pending in the application.
- 4a) Of the above claim(s) 2, 11-13 and 15-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 7, 9, 10, 14 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/18/09</u> .                                                 | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Upon entry of the amendment filed on 12/12/08, Claims 2, 11-13, 15-21 are withdrawn; Claim 8 is cancelled. The currently pending claims are Claims 1-7 and 9-25.

Applicants' remarks and amendments have been carefully considered; however, they are not found persuasive and the 103(a) rejections are maintained.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 3-4, 9-10 and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Mitsubishi '930 or Mitsubishi '739.

Chen et al. disclose a composition with carbon nanotubes, a conductive polymer such as polypyrrole which is soluble in water and a solvent such as water (parag. 15, 19 and claims 27, 58).

Chen et al. disclose the composition of claim 1 but do not explicitly disclose the presence of a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

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It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

4. Claims 1, 3-5, 9-10, 14 and 22-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. in view of Mitsubishi '930 or Mitsubishi '739.

Glatkowski et al. disclose a composition obtained by mixing a polymer such as a conductive polymer with nanotubes and various additives such as a surfactant in a water solvent followed by stirring and sonication. The resulting solution is casted as an electrically conductive film on a substrate and dried by imparting heat (claims 1 and 15; parag. 49, 52-53, 61 and 88-89).

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Although Glatkowski et al generally teaches the surfactant and conductive polymer features in their composition, the reference does not require the component(s) with sufficient specificity to constitute anticipation.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have formulated a composition, as taught by Glatkowski et al, which contained a surfactant and a conductive polymer disclosed and taught by Glatkowski et al. therefore, one of ordinary skill in the art would have had a reasonable expectation of success, because such a composition containing a surfactant and a conductive polymer is expressly suggested by the Glatkowski et al disclosure and therefore is an obvious formulation.

Glatkowski et al. disclose the composition of claim 1 but do not explicitly disclose the presence of a high molecular weight compound, a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive

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at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

5. Claims 1, 3-4, 9-10, 14 and 22-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Eikos, Inc. in view of Mitsubishi '930 or Mitsubishi '739.

Eikos, Inc. discloses a composition comprising a solvent, a polymeric matrix such as a conductive polymer and carbon nanotubes (abstract, claims 1, 13 and page 10, lines 7-19). The composite obtained by mixing and sonication is applied as a coating to a substrate and dried to remove the solvent (page 11, lines 4-11 and page 17, lines 5-15).

Although Eikos, Inc. generally teaches the conductive polymer feature in its composition, the reference does not require the component(s) with sufficient specificity to constitute anticipation.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have formulated a composition, as taught by Eikos, Inc., which contained the conductive polymer disclosed and taught by Eikos, Inc. therefore, one of ordinary skill in the art would have had a reasonable expectation of success, because such a composition containing a conductive polymer is expressly suggested by the Eikos, Inc. disclosure and therefore is an obvious formulation.

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Eikos, Inc. disclose the composition of claim 1 but do not explicitly disclose the presence of a high molecular weight compound, a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

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6. Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al., Eikos, Inc. or Chen et al. in view of Mitsubishi '930 or Mitsubishi '739 as applied to claim 1 above, and further in view of Hsu.

Glatkowski et al., Eikos, Inc., or Chen et al. in view of Mitsubishi '930 or Mitsubishi '739 disclose the composition of claim 1 but do not explicitly disclose the inclusion of a colloidal silica component.

In an analogous art, Hsu discloses an electrically conductive composition with a colloidal component (page 5, parag. 71-72 and example 7, page 13). It would be obvious to a skilled artisan to use a silane component to control the rheology of the nanocomposite. Furthermore, it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan.

#### ***Allowable Subject Matter***

7. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The most pertinent prior art known to the Examiner is listed on the attached forms PTO-892 and 1449. As shown by Glatkowski et al., Eikos, Inc., or Chen et al., the close prior arts of record, a carbon nanotube composition that includes conducting polymers, a water solvent component and carbon nanotubes are well-known. Furthermore, Mitsubishi '930 or Mitsubishi '739 teach the specific conducting polymer. However, none of the prior art of record including



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Glatkowski et al., Eikos, Inc., or Chen et al. and Mitsubishi '930 or Mitsubishi '739 provides sufficient suggestion or motivation to include the silane component of formula (1) as required in the present claims. Accordingly, the claimed invention, as a whole, would not have been obvious to one of ordinary skill in the nanotechnology art. None of the prior art of record teaches, discloses or suggests the composition with all four ingredients - (1) a water soluble conducting polymer with an acidic group, (2) a water solvent, (3) carbon nanotubes and (4) the specific silane component in the manner as those recited the present claims.

### ***Response to Arguments***

8. Applicant's arguments filed on 05/12/08 regarding to claims 1, 3-5, 9-10, 14 and 22-25 over Glatkowski et al., Eikos, Inc., or Chen et al. in view of Mitsubishi '930 or Mitsubishi '739 and claim 7 have been fully considered but they are not persuasive.

a. Applicants argue that the combination of the Chen and Mitsubishi '930 or Mitsubishi '739 references does not teach the features of an aqueous carbon nanotube doped conducting polymer composition (pages 20 et seq.). In particular, applicants argue that the Chen and Mitsubishi '930 or Mitsubishi '739 references do not teach conducting polymers with acidic groups which are soluble in a water solvent. The examiner respectfully remarks that the Chen reference is relied upon to teach a composition with carbon nanotubes, water solvent and functionalized conducting polymers (e.g. polypyrrole) - see Figs 2-3 for an acidic functionalization -. Furthermore, it is noted that the teaching of the specific polymer of formula (5) is provided by the Mitsubishi references. Regarding the various claimed properties such as conductivity and solubility, it is noted that the court has held that that a material and its properties are inseparable (*In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)) and that compositions are indefinite for being defined in terms of properties. Ex parte

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Spacht, 165 USPQ 409 (PO BdPatApp 1969); Ex parte Slob., 157 USPQ 172 (PO BdPatApp 1967); Ex parte Pulvari, 157 USPQ (PO BdPatApp 1966). Thus, even though the cited references do not explicitly state the conducting or solubility properties of the polymer, it would be expected that the polymer keeps its conducting or solubility properties absent of unexpected results. In particular, it is noted that the Chen reference is directed to a solubilizing feature of the composition and that §19 and claims 27 and 58 disclose the solvent being water, thus it would be expected that the disclosed polymer would be soluble in water. The claims would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

b. Applicants argue that the Glatkowski reference does not teach the features of an aqueous carbon nanotube doped conducting polymer composition and the combination with the Mitsubishi references is not obvious (page 24). In particular, applicants argue that the Glatkowski reference does not disclose an example of a composition with the conduction polymer. The examiner respectfully remarks that the Glatkowski reference teaches a composition with carbon nanotubes, conducting polymers and water solvency and the Mitsubishi references are relied upon to teach applicant's conducting polymer. Regarding the various claimed properties such as conductivity and solubility, it is noted that the court has held that that a material and its properties are inseparable (*In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)) and that compositions are indefinite for being defined in terms of properties. Ex parte Spacht, 165 USPQ 409 (PO BdPatApp 1969); Ex parte Slob., 157 USPQ 172 (PO BdPatApp

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1967); Ex parte Pulvari, 157 USPQ (PO BdPatApp 1966). Thus, even though the cited references do not explicitly state the conducting or solubility properties of the polymer, it would be expected that the polymer keeps its conducting or solubility properties absent of unexpected results. The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer. Furthermore, it is noted that all disclosures of the prior art, including non-preferred embodiment, must be considered. See *In re Lamberti and Konort*, 192 USPQ 278 (CCPA 1967); *In re Snow* 176 USPQ. 328, 329 (CCPA 1973) and that prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. Denied*, 469 U.S. 851 (1984). In this instance, Glatkowski et al. teach each of the components of the composition.

c. Applicants argue that the Eikos reference does not teach the features of an aqueous carbon nanotube doped conducting polymer composition and the combination with the Mitsubishi references is not obvious (page 25). In particular, applicants argue that the Eikos reference does not disclose an example of a composition with the conduction polymer. The examiner respectfully remarks that the Eikos reference teaches a composition with carbon nanotubes, conducting polymers and water solvency and the Mitsubishi references are relied upon to teach applicant's conducting polymer. Regarding the various claimed properties such as conductivity and solubility, it is noted that the court has held that that a material and its properties are inseparable (*In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)) and that

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compositions are indefinite for being defined in terms of properties. Ex parte Spacht, 165 USPQ 409 (PO BdPatApp 1969); Ex parte Slob., 157 USPQ 172 (PO BdPatApp 1967); Ex parte Pulvari, 157 USPQ (PO BdPatApp 1966). Thus, even though the cited references do not explicitly state the conducting or solubility properties of the polymer, it would be expected that the polymer keeps its conducting or solubility properties absent of unexpected results. The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

d. Applicants argue the Hsu reference does not teach the colloidal silica (page 26). The examiner respectfully disagrees and notes that the Hsu reference teaches a composition that includes carbon nanotubes, colloid particles, silica and photoconductive polymers (§ 71-72).

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRI V. NGUYEN whose telephone number is (571)272-6965. The examiner can normally be reached on M-F 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. V. N./  
Examiner, Art Unit 1796  
March 23, 2009

/Mark Kopec/  
Primary Examiner, Art Unit 1796